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TABLE OF CONTENTS

HISTORICAL FUND
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NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

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Illness, Life Experiences and Social Environment

By the beginning of the present decade, there was enough clinical and experimental evidence to establish the fact that a man's reactions to the situations that he encounters in his daily life may affect a great number of his internal processes. In effect, it was clear that any bodily function subject to the regulation of the central nervous system might be influenced to a significant degree, and that the regulatory influences of the central nervous system might be mediated directly by way of the neural pathways or internal secretions, or indirectly, by way of changes in the over all behavior of the individual. The effects of these, taken together, might lead to notable variations in general activity, energy expenditure, food and fluid intake, sleep patterns, and the like, and to important changes in the specific demands made upon various organ systems, especially when such systems are involuntarily involved in reaction patterns not directly appropriate to the adaptation which the organism is attempting to make. In short, a sound theoretic and experimental basis supports the old clinical observation that disease may wax and wane according to the moods and fortunes of the patient.

On the other hand, the extent to which such adaptive reactions are involved in disease in general and the degree to which they determine the health of the individual remained to be established. In an attempt to answer some questions in this area, the studies of the relation between human health and human ecology which formed the basis for this article were undertaken. To the present time, those engaged in these studies have investigated the illness patterns of more than 3000 people drawn from the ambulatory population. The subjects fall into five population groups each relatively homogeneous in certain important respects and each selected because an opportunity was presented for answering questions pertinent to the over all investigation.

The people studied were: 1700 semiskilled American working women, 1527 skilled American working men, 100 Chinese graduate students and professional people, 76 Hungarian refugees, and 132 recent graduates of American colleges.

Episodes of illness were not distributed at random among the members of any of these groups. In each group, during two decades of young adult life, one-fourth of the individuals had experienced approximately one-half of all episodes of illness that had occurred among all of the people. The distributions were such that they can be explained only by assuming that some factor in addition to chance operates to determine them. In other words, the members of each group behaved as if there were differences in their susceptibility to illness.

These differences in susceptibility to illness were not simply the result of differences in susceptibility to one or another specific syndrome. In every group, the members displayed a difference in their susceptibility

to illness in general, regardless of its type or of the causal agents apparently involved. Thus, as the number of episodes of illness experienced by an individual increased, the number of different types of disease syndromes exhibited also increased. Although a great many syndromes might involve one or two organ systems, episodes of illness were not limited to a few systems; instead, as the number of episodes of illness experienced by an individual increased, the number of his organ systems involved in disease increased. Likewise, as the number of episodes he experienced increased, he exhibited illnesses of an increasing number of etiologies. He was likely to have more "major" irreversible and life-endangering illnesses as well as more "minor" reversible and transient illnesses. Finally, as the number of his "bodily" illnesses increased, the number of his "emotional disturbances" and "psychoneurotic" and psychotic manifestations (here categorized as "disturbances of mood, thought, and behavior") usually also increased.

These findings have been obtained consistently in each of these five groups, regardless of sex, race, culture, economic or social background, environment, or life experiences of the people studied. They are most reasonably explained by assuming that they are dependent upon factors operating within the individual, influencing the ease, the frequency, and the degree to which he responds to the great variety of other factors known to be capable of causing disease.

If one examines the illness patterns of men and women over many years of their adult lives, one finds that each person has a rather consistent mean rate of illness episodes around which his annual rate fluctuates. However, from time to time, there occur peak periods usually of several years' duration during which the episode rate may be much higher. The authors call such peak periods "clusters" of illness episodes. If one arbitrarily defines a "cluster year" as a year during which the episode rate for disabling illnesses is 1.75 or more times as great as the mean rate for the individual over the entire observation period, one finds that, in those people who show the phenomenon of "clustering", about one-eighth of the years are "cluster years" and that about one-third of each person's illnesses occur during such years.

When one brings together the information derived from this considerable number of people of such diverse backgrounds and experience, one can scarcely escape the conclusion that whoever a man may be and whatever may happen to him the way that he perceives his life situation and reacts to it is an important determinant of his health. It is a reasonable estimate that at least one-third of all illness episodes that occurred among these people were influenced in their time of occurrence or in their course by the attempts of the individual to adapt to the events and situations that he encountered. This estimate is based upon the occurrence of "clusters" of episodes and their demonstrated relation to life experiences. Probably one should add to this the

evidence that people with a consistently high illness rate experienced a majority of all of the episodes that occurred among the group because such consistently high rates of illness are at least in part based upon a continuing inability of the individual to make an adequate adaptation to his milieu. When this additional point is considered, it becomes likely that efforts to adapt to the social environment are to some degree involved in the majority of all illness episodes that occur among the adult population.

That the state of the host is one of the determinants of the occurrence of illness is axiomatic in medicine. The observation that exposure, overactivity, extreme fatigue, and other periods of physiologic disturbance may facilitate the occurrence of disease or adversely affect its course is as old as recorded medical lore. However, it is perhaps not generally appreciated that the state of the host is an important determinant of so large a proportion of illness episodes and that a man's susceptibility to illness during adult life is to such a large degree influenced by his relation to the society in which he lives and the people in it. Evidently, all illness is to some extent affected by the way that men perceive their life situations and react to them.

Obviously, some illnesses are influenced in this manner much more readily and to a much greater degree than others. Illnesses so easily influenced are well known and some of them, such as peptic ulcer and asthma, have been called "psychosomatic." But these studies yielded no evidence to support the idea that there is any special category of diseases which should be designated by this term. So far as these data are concerned, there need be no qualitative difference between peptic ulcer, typhoid fever, carcinoma of the breast, and gout in the way that these diseases are related to the patient's general adaptation. What ever difference is present appears to be only quantitative in that peptic ulcer appears to be more readily, more frequently, and to a greater extent influenced in its course by the physiologic effects of such adaptations.

The only illnesses in which a disturbance of the adaptation of the individual to his social environment is, by definition, a necessary condition, lie in that category which is defined as disturbances of mood, thought, and behavior—"sociopathic" or "psychopathic" behavior and perhaps some of the psychoneuroses and psychoses. During these studies, it was consistently observed that bodily illnesses and disturbances of mood, thought, and behavior do often occur together, but that there appears to be no causal connection between them; it seems rather that both are a part of the response of the man to his total milieu, internal as well as external, at a given time.

The evidence indicates that the reaction of a man to his life situation has an influence upon all forms of illness and that it plays a role of significance in at least one-third of all episodes of disease regardless of their nature or location, their cause or their severity. Ultimately, medicine will have to take account of this in the treatment of illness. It is probable that an increasing proportion of therapeutic effort will have to be directed at the

patient's relation to his environment in order to make any significant improvement in his health. In view of the complexities involved in dealing with human relationships, human attitudes, and human behavior, and the ineffectiveness of present methods of dealing with these factors, it is also probable that these efforts will be difficult, time-consuming, and not, at first, highly rewarding. The problem stands as a stern challenge to medicine and not as an easy opportunity. (Hinkle, L. E. Jr., Wolff, H. G., Ecologic Investigations of the Relationship Between Illness, Life Experiences and the Social Environment: Ann. Int. Med., 49: 1373-1387, December 1958)

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Systolic Clicks

This study reviews the subject of systolic clicks or ejection sounds and evaluates the authors' material in an endeavor to ascertain their incidence in various cardiac anomalies constituting basic anatomic deformities or underlying hemodynamic states, their relationship to the first heart sound, their probable mode of origin and, finally, their diagnostic importance.

The material utilized for this study is comprised of 809 phonocardiograms on 598 patients of whom 540 were below the age of 16 years. Of the 598 patients, 146 revealed systolic clicks of one form or another. In addition to a complete history, each patient had a thorough physical examination with detailed notation of auscultatory findings of the heart, chest roentgenograms in the anteroposterior and two oblique views, a 15-lead electrocardiogram, and a comprehensive phonocardiogram. In over two-thirds of the patients with systolic clicks, the exact nature of the diagnosis was further substantiated by 97 cardiac catheterizations, 83 angiocardiograms, 23 surgical operations, and 16 autopsies.

Systolic clicks is a worthy, qualitative description of the "sounds" in systole under consideration. In rare instances, the clicking character is not so evident as in others. The clicks occurring in early systole which give the impression of a split first heart sound, with the second component significantly louder than the first or definitely different in character, are the more important. These are palpable at times and may be audible all over the precordium, but almost invariably have a site of maximal intensity. Their selective maximal intensity at the second, and sometimes at the third, left intercostal space parasternally, with generally poor or no conduction to the apex unless they are loud (significant variation during respiratory cycles with evident increase in intensity in expiration, sometimes amounting to complete absence in inspiration), indicates a pulmonic origin either at the level of the pulmonary valve or the pulmonary artery. In some instances of severe valvular pulmonary stenosis, the click may be so early

as to simulate a non-split first heart sound maximal at the second left intercostal space. The aortic clicks are, as a rule, maximal at the apex, only occasionally maximal at the third and fourth left intercostal spaces parasternally, and rarely maximal at the second right intercostal space parasternally. In any case, they are widely propagated over the entire precordium. In transposition of the great vessels, an apical early systolic click may originate from the pulmonary artery. Either the intensity of the aortic clicks is constant throughout the respiratory cycles or the change manifested is not remarkable.

The clicks heard near mid-systole, in mid-systole, or in late systole may be single or multiple, do not generally give the impression of any temporal relationship to the first heart sound, are heard best at the apex or lower left sternal border, are usually not heard at the base, are rarely loud enough to be palpable, may or may not precede a systolic murmur, are apt to be evanescent from one examination to another, usually vary with respiration, may significantly change with respect to timing from cycle to cycle, and are generally not associated with other significant murmurs or abnormal character or intensity of heart sounds. Such are the clicks commonly associated with a normal cardiovascular status. Occasionally, they may be heard in a definitely abnormal anatomic lesion or hemodynamic state in which instances their occurrence is likely fortuitous. In every one of the present cases, the authors were able to elicit the systolic clicks by conventional auscultation.

Phonocardiographically, the clicks are registered in systole as wave forms of comparatively high frequency, of relatively short duration, varying from what may appear as a single vibration to rapid multiple vibrations. Their amplitude varies directly with their intensity. Because of their frequency content, the high-frequency or logarithmic records are best suited for their delineation.

Whereas the systolic clicks occurring in mid-systole and late systole are of relatively insignificant diagnostic importance, the early systolic clicks or ejection sounds undoubtedly are a category apart, for the very fact that they occur almost exclusively in abnormal cardiac states. Of 135 patients with early systolic clicks, 133 had definite cardiac lesions or abnormal hemodynamic states. Two of the apparently normal patients revealed early systolic clicks of the aortic variety and also had what was estimated to be a loud aortic closure. This phenomenon may be either a normal variant or possibly a congenital thickening or fibrosis of the aortic valve leaflets without manifest stenosis. A similar situation may exist with respect to the pulmonary valves.

On the basis of clinical auscultation and graphic registration, the more important early systolic clicks appear to be closely related to the second component of a physiologically split first heart sound. Detailed clinical and phonocardiographic characteristics of systolic clicks were noted and the

more significant early systolic clicks differentiated from the comparatively benign ones occurring just before mid-systole, in mid-systole, and in late systole. Clicks of the latter type were encountered mostly in normal hearts, but were also found in abnormal states.

Early systolic clicks were noted to occur in anomalies involving congenital malformations of the stenotic type in the aortic and pulmonary valves and in those involving dilatation of the aorta and pulmonary artery. The aortic clicks generally tended to be of maximal intensity at the apex and varied little during respiratory cycles. The pulmonic clicks were maximal at the second left intercostal space parasternally and were loudest during expiration, sometimes disappearing completely with inspiration.

The incidence of early systolic clicks was appreciably high in congenital aortic stenosis while they were present in about one-half of the cases of congenital isolated pulmonary stenosis. The latter anomaly in a majority of cases was of the mild to moderate type. In these conditions, the early systolic clicks always preceded the ejection murmurs. In congenital aortic stenosis, the aortic closure was unusually loud in most instances; in congenital pulmonary stenosis, a few cases revealed an abnormally loud pulmonic closure.

Of the anomalies involving the aorta, the early systolic clicks were found to be quite consistently present in cases of truncus communis, but were also noted in extreme cases of tetralogy of Fallot and only occasionally in coarctation of the aorta, transposition of the great vessels, tricuspid atresia, aortic regurgitation, and atherosclerosis of the aorta. Dilatation of the pulmonary artery associated with Eisenmenger's physiology, Taussig-Bing complex, and idiopathic dilatation of the pulmonary artery revealed that early systolic clicks were a relatively constant finding in these conditions. Pulmonary hypertension at less than systemic levels and pulmonary dilatation secondary to large left-to-right shunt with normotensive pressures were sometimes noted to be associated with early systolic clicks.

With respect to timing, the ejection component of the first heart sound as well as the aortic clicks, and the concept of isometric rise of aortic pressure as reflected in simultaneous indirect arterial tracings is discussed.

The early systolic clicks were considered to be a pathologic manifestation of the second major, or ejection, component of the first heart sound and, depending on their origin, to reflect the isometric contraction period or beginning of the ejection phase of either ventricle.

In congenital aortic stenosis and valvular pulmonary stenosis, the early systolic clicks seemed to originate at the valvular level, occurring after the atrio-ventricular valve closure at a mean time interval of 0.055 and 0.033 second respectively. In other conditions, the vessel wall of the aorta or the pulmonary artery appeared to be their seat of origin. The mode of occurrence of the more benign mid and late systolic clicks could not be ascertained.

The presence of early systolic clicks was considered an abnormal finding in itself, and their proper evaluation was regarded as being of significant

diagnostic importance. Their absence did not imply exclusion of any given entity or hemodynamic state. (Minhas, K., Gasul, B.M., Systolic Clicks - A Clinical, Phonocardiographic, and Hemodynamic Evaluation: Am. Heart J. 57: 49-64, January 1959)

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Pseudomonas Septicemia

With the advent of potent antibiotics and other new drugs, the role of Pseudomonas aeroginosa as an infectious agent in man has become more important. Only scattered reports are available, however, describing pseudomonas septicemia and its response to contemporary antimicrobial agents. On this account, observations on the clinical therapeutic and morphologic aspects of pseudomonas septicemia appear to be timely.

The files of the Bacteriology Department of the Clinical Center, National Institutes of Health, were reviewed for patients with blood cultures positive for Ps. aeruginosa. An examination was then made of the clinical charts and reports of the postmortem cultures of this group. Most of the patients had been observed daily and treated by one or more of the authors. Autopsies were performed in all of the 22 fatal cases.

Thirteen of the 23 patients were from the acute leukemia service of the National Cancer Institute and were selected for special presentation and comparison of certain data because their clinical management was similar.

In 23 patients with pseudomonas septicemia, certain clinical features occurred repeatedly. In 52%, jaundice developed and 65% had neurological disorders. Neurotoxicity with pseudomonas infection has been observed in animals and possibly in man. Stevens and co-workers described an 18-year old boy who died 66 hours following transfusion of blood contaminated with pseudomonas species. The clinical phenomena observed in this patient were seen in many of the present patients. Stevens suggested the possibility that a "toxin" played a significant role in the patient's symptoms and death as antibiotics were effective in sterilizing the patient's blood. In 3 of the present patients, antibiotics were effective in sterilizing the blood, but clinical improvement did not occur.

Rolly, among other early writers, stressed the presence of a hemorrhagic diathesis and abnormal coagulability of the blood. Numerous reports have stressed the fact that severe pseudomonas infections may produce granulocytopenia. Experimental work has shown that Ps. aeruginosa or its toxin can induce granulocytopenia in animals and injections of endotoxin from gram-negative bacteria can produce a similar phenomenon in man.

Although polymyxin-B is generally accepted as the therapy of choice, analysis of sensitivity studies performed on the bacterial isolates from these patients showed that, on an in vitro basis, neomycin was superior to

polymyxin-B. The small number of patients treated with neomycin and the almost invariably fatal outcome prevented satisfactory evaluation of this drug in vivo. Short patient-survival times precluded extended specific therapy. In the present series, even the best available antimicrobial agents did not affect the rapid and almost uniformly fatal outcome.

On the acute leukemia service, pseudomonas infections frequently occurred in small "epidemics." The factors responsible are as yet unknown, but are under investigation. Epidemics due to Ps. aeruginosa are rare, but have been described with relation to infantile diarrhea, omphalitis, and gastroenteritis. An epidemic pseudomonas meningitis presumably resulting from contamination of medicines has occurred.

Many factors contribute to lowered host resistance in patients with acute leukemia. Among these are granulocytopenia, mucosal bleeding, leukemic infiltrates of the gums, oral cavity, and intestinal tract, and malnutrition. Antibody response and altered phagocytic properties of abnormal leukocytes in these patients have been investigated in this connection.

Adrenal steroids or adrenocortocotrophic hormone may favorably affect the course of severe infections. Conversely, there is evidence, particularly in experimental infections, but also in certain infections in humans, that these hormones may exert an adverse effect. Millican found that cortisone increased the susceptibility of mice to infections with Ps. aeruginosa.

Infections, particularly those due to gram-negative bacteria, frequently occur in patients receiving adrenal steroids. Patients in whom pseudomonas septicemia developed in the absence of adrenal steroids received no apparent benefit from their subsequent administration.

The toxic manifestations of both total body radiation and antimetabolite compounds have much in common. Recently, reported experiments have shown that mice subjected to radiation frequently died of pseudomonas septicemia. The authors' data would suggest that patients treated with antimetabolites, especially those treated to toxicity, are more likely to acquire pseudomonas septicemia—a development possibly related to adverse effects of antimetabolites on host resistance. In particular, the possibility that bacterial seeding may originate in the areas of damaged bowel mucosa must be considered. (Forkner, C.E. Jr. et al., Pseudomonas Septicemia - Observations on Twenty-Three Cases: Am. J. Med., XXV: 877-887, December 1958)

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Chemotherapy of Tuberculosis

Tuberculosis continues to be a serious infectious disease, and the chemical approach to its control has become of ever-increasing importance over the past 15 years. Such management is the very foundation of treatment, rendering the use of general bodily rest, reversible collapse therapy, and even sanatorial care of secondary importance.

This use of drug treatment, however, has not uniformly controlled clinical tuberculosis; as a result of increased efforts at case finding, the number of new cases of tuberculosis each year remains remarkably constant.

The ideal characteristics of an antituberculosis agent should include: (1) small molecular weight with associated easy diffusibility to the site of the infection, (2) tuberculocidal rather than tuberculostatic activity in vivo, (3) relative atoxicity to the host, and (4) a slow rate of emergence of resistant strains of tubercle bacilli. Unfortunately, no antimicrobial has been isolated which possesses all of these characteristics, but a number of agents have been found to be rather effective in the control of tuberculous disease. These may be divided into the antibiotics and the synthetics.

All important antibiotics effective against tubercle bacilli are produced by soil organisms of the genus Streptomyces. These are streptomycin, dihydrostreptomycin, viomycin, neomycin, cycloserine, streptovaricin, kanamycin, and oxytetracycline.

Many synthetic compounds have been screened for their antituberculosis activity and several groups of substances have been promising. They are the sulfones, thiosemicarbasones, aminohydroxybenzoic acids, the derivatives of pyridine carboxylic acid, and a few other agents of recent interest.

The sulfones and thiosemicarbasones are relatively toxic when administered for prolonged periods of time. PAS is the principal member of the aminohydroxybenzoic acid group. Isoniazid, iproniazid, and pyrazinamide are derivatives of pyridine carboxylic acid. Other agents—the thiocarbanilides and hinconstarch—are under study.

Virulent tubercle bacilli have entered the bodies of the majority of humans on this earth. The portal of entry usually is the respiratory tract, although significant infection occurs by way of the gastrointestinal tract. Localized infection is established in pulmonary parenchyma or intestinal mucosa, but fortunately, the vast majority of individuals satisfactorily control this initial insult. A scar, harboring viable tubercle bacilli, remains; sensitivity to tuberculoprotein follows; and some degree of relative resistance to subsequent infection is acquired. Later events are dependent upon many factors which determine whether true reinfection with tubercle bacilli from an exogenous source occurs or whether an endogenous exacerbation of disease appears.

Most patients with active clinical tuberculosis present advanced pulmonary disease. The insidious onset and progression coupled with a paucity

of signs and symptoms frequently fail to alert either the patient or his physician to the possibility of tuberculosis of the lungs. Consequently, at the time of admission to a sanatorium, some 45% of patients manifest far-advanced disease and only 15% or less have but minimal involvement. The use of chemotherapy in the treatment of tuberculosis is by necessity directed principally at those patients with advanced pulmonary involvement.

Patients with active tuberculosis of any organ or system of organs, confirmed by any of the acceptable methods of which the recovery of tubercle bacilli is the most precise, are candidates for chemotherapy. The choice of drug regimen, the duration of therapy, and the need for other forms of management must be made on an individual basis.

Public health reasons usually render it mandatory that a patient be hospitalized, but just as importantly, the best treatment of tuberculosis can be effected in a sanatorium where there are special facilities and trained personnel for care of the disease. Although great reliance is placed upon chemotherapy and there has been modification of programs of rest, strict bed confinement is employed usually for patients who have fever or other signs of toxicity. Some programs allow free ambulation later. There has been de-emphasis of the use of reversible collapse therapy, so that although pneumoperitoneum may be employed to some extent, pneumothorax and phrenic nerve paralysis virtually have disappeared from the therapeutic scene.

After demonstration of the efficacy, low toxicity, and low incidence of bacterial resistance to the regimen of streptomycin and PAS, it became established that the ideal chemotherapeutic regimen for the treatment of tuberculosis was a combination of two or more drugs given concurrently for a long time. Such long-term combination chemotherapy has become accepted widely as superior to single drug treatment in sequence.

The objective of the drug treatment of pulmonary tuberculosis is to achieve as much resolution of the reversible components of the disease as possible with the least disadvantage to the patient. The use of chemotherapy has been demonstrated to be the most effective means of altering the host-parasitic relationship in favor of the host, and although sufficient time has not passed to determine the ultimate prognosis of drug-treated tuberculosis, early results are most encouraging.

The efficacy of chemotherapy is limited by the antituberculosis activity of the drugs as manifest by clinical response, roentgenologic change, sputum conversion, and cavity closure; by the duration of therapy, by drug toxicity, and by the appearance of bacterial resistance.

Active pulmonary tuberculosis under chemotherapy responds quite uniformly. With or without the aid of various forms of reversible collapse therapy, the exudative components of the disease regress, sputum frequently reverts to negative, and a significant number of cavitary lesions close. This early goal in the treatment of pulmonary tuberculosis has been designated by

D'Esopo as the "therapeutic target point," consisting of three parts: (1) regression and stability of disease by roentgenologic examination of the chest, (2) conversion of sputum to negative on culture, and (3) no evidence of residual cavity. Failure to attain this target point may be a result of persistently positive sputum or instability of disease, but more likely is due to a lack of cavity closure.

When the target point is not reached, there is little question that surgical intervention should be considered. Ideally, this would consist of surgical resection of the residual cavity or other significant disease. The smallest subdivision of pulmonary tissue compatible with the removal of the significant disease would be removed. There continue to be indications for pneumonectomy, but most resections are the removal of lobes, segments, or even subsegments or "wedges" of disease tissue.

An unfortunately large group of patients, who fail to reach target point, refuse surgery, have extensive disease or diminished cardiorespiratory function which precludes surgical intervention. These must be managed by chemotherapy alone and most are treatment failures, although they may be rendered sputum negative for several years before bacteriologic relapse occurs. This group of patients—usually males, mostly in the older ages and often recalcitrants—pose serious economic and public health problems; their prolonged hospitalization seems the only adequate method of their control.

Although the proportion of patients with tuberculosis who represent extrapulmonary manifestations of disease is relatively small, they comprise an important clinical group. The serious prognosis of miliary and meningeal involvement has called special attention to the effects of chemotherapy in extrapulmonary tuberculosis. All forms of active tuberculosis have shown favorable response to chemotherapy. Pericardial, enteric, peritoneal, and genital tuberculosis are benefited even though surgical intervention may be indicated.

Tuberculosis of the spine, hip, and knee may be controlled by chemotherapy while at local rest, to be followed by the indicated surgical fusion. Essentially, no weight-bearing joints can be treated successfully by chemotherapy alone, although some isolated osseous lesions, tenosynovitis, and an occasional nonweight-bearing joint can be managed by antimicrobials alone. The chemotherapy of orthopedic tuberculosis has shortened markedly the periods of morbidity and rendered safe the judicious use of surgical intervention.

Renal tuberculosis also responds to chemotherapy. Fewer indications for nephrectomy arise and usually adequate protection of the lower urinary tract from descending infection can be effected. No great experience has been had with INH-PAS, but INH-SM or INH-SM-PAS definitely is superior to SM-PAS in converting urine to negative on culture. Continuous chemotherapy appears indicated for a period of at least two years. (Davey, W. N., The Chemotherapy of Tuberculosis: G P, XIX: 107-117, January 1959)

Treatment of Papillary Carcinoma of the Thyroid Gland

Articles can be found in the literature which advocate wide variations in methods of management of carcinoma of the thyroid gland. Some physicians are of the opinion that certain malignant lesions should not be treated surgically; some advise only conservative surgical measures, while others recommend radical surgery for the same lesions. Generally, it is recognized that the types of cancer occurring in the thyroid gland vary considerably in the degree of malignancy.

In general, carcinomas of this gland can be divided into two groups: (1) those of low degree of malignancy, the majority of which are papillary carcinomas; and (2) those of high degree of malignancy, the anaplastic carcinomas. The behavior pattern of each group is decidedly different from that of the other. For the anaplastic lesions of the thyroid gland, present methods of treatment are inadequate and the survival rate is extremely low; while for the other group, present methods of treatment—even though varying in degree—are adequate and the prognosis is excellent. Because of wide variation in prognosis, the types of carcinoma must not be confused and must be discussed separately.

The histologic classification of malignant lesions of the thyroid is, as yet, not fully standardized and there may be some disagreement among pathologists as to the best method of classifying the more slowly growing types of carcinoma. In general, however, there is fairly universal agreement on what constitutes a papillary cancer of the thyroid. As currently defined in the Section of Surgical Pathology at the Mayo Clinic, papillary carcinoma is a well differentiated tumor which usually shows a striking mixture of papillary and follicular structural components. A few tumors are almost completely papillary in architecture, while at the other extreme some tumors may be almost entirely follicular and the papillary component minimal in amount. Occasionally, a metastatic node may be predominantly papillary while the primary lesion is predominantly follicular in architecture. These tumors invade parenchymal or extrathyroidal structures and metastasize primarily to regional lymph nodes and occasionally to distant sites.

Within the papillary group, considerable variation is apparent in size of the primary lesion and the degree of invasiveness of the tumor. Certain papillary carcinomas may be minute, even microscopic, and yet be associated with bulky nodal metastasis. These small papillary tumors may be detected by the presence of enlarged cervical nodes or may be picked up in the course of surgical procedures for other conditions in the thyroid gland. It is not considered desirable to make subdivisions within this group of small carcinomatous lesions (1. cm. or less in diameter). For the purpose of this article, all lesions of this size, although papillary, have been grouped under the designation, "occult sclerosing carcinoma."

Other slowly growing carcinomas of the thyroid including encapsulated follicular and solid angioinvasive carcinoma, Hürthle cell carcinoma, and solid carcinomas with "amyloid" stroma do not show any papillary architecture and have been excluded from this study. The present study was undertaken to evaluate a series of patients with lesions of papillary types.

As a rule, carcinoma for which surgical treatment is indicated is best treated by as radical a surgical procedure as feasible to eradicate the primary lesion as well as the primary region of spread. In surgery of the head and neck, this rule holds true for squamous cell carcinomas and for most adenocarcinomas. However, papillary carcinoma of the thyroid gland is, in the opinion of the authors, an exception to this rule. It is a slow-growing lesion and if the patient is treated surgically when the lesion is in an operable stage, the prognosis is excellent. Even for patients who have lesions which are inoperable and who undergo biopsy only or palliative resection, the period of survival is prolonged. Many patients live 5, 10, or more years before dying of this disease. Distant metastatic lesions may be present for many years before causing death.

The natural life history of papillary carcinoma of the thyroid gland and the excellent survival rates as illustrated in the present series of cases have made the authors reaffirm their belief that patients having this disease do not always have to be treated by radical operation. Although total thyroidectomy and radical neck dissection can be accomplished with a mortality rate of less than 1% and with low morbidity, they consider it both unwise and unnecessary to extend an operation beyond the limits that will offer the patient an excellent chance of survival and cure. Total thyroidectomy results in myxedema, a permanent disability. This deficiency is easily managed by replacement therapy. Total thyroidectomy also exposes the patient to parathyroid tetany which is a severely incapacitating disease which also requires prolonged treatment. Martin has said that the seriousness of tetany has been overemphasized. In the authors' experience, it has proved to be a serious handicap for the patient. In treatment for other types of malignant disease, preservation of the parathyroid glands might be insignificant, but in the management of papillary carcinoma it is not. The glands can be identified—in contrast to what has been said—and an attempt should be made to preserve some parathyroid tissue unless in so doing gross carcinoma is not removed.

In 11% of the cases of papillary carcinoma, multicentric lesions are present in the thyroid gland. Consequently, the total thyroid gland should always be explored. In contrast to what has been said in the literature, exploration of the thyroid gland does not jeopardize the success of subsequent dissection in the lateral portion of the neck if such a procedure becomes necessary. The lesions are frequently small and difficult to palpate. Because of the occurrence of multicentric lesions, lobectomy should be done

on the side of the known lesion and subtotal lobectomy on the opposite side. Admittedly, a small lesion could be left behind in the remnant, but this has rarely occurred. When a small portion of thyroid tissue is preserved, the development of myxedema is usually prevented and parathyroid tissue and the recurrent laryngeal nerve on that side are further protected. If, at the time of operation, however, carcinoma is found to be extensive in the thyroid, or many lesions are found to be present in the gland, or distant metastatic lesions are known to be present, then total thyroidectomy should be done.

In contrast to what has been stated by some, papillary metastatic lesions in the cervical lymph nodes remain well encapsulated for long periods. Apparently, spread is by embolization because invasion into adjacent tissues along lymphatic vessels is rarely seen. The truth of these facts makes the en bloc dissection of the lateral portion of the neck necessary in the presence of squamous cell carcinoma, but not necessary for papillary carcinoma. If there is extensive involvement of all groups of cervical nodes, then standard radical neck dissection is the only practical method of removing the involved regions. However, if only one or several of the groups of nodes are involved, then it is the belief that something less than radical neck dissection can be done.

The incidence of nodal metastasis in the present series is 47.1%. Others have reported in the literature an incidence as high as 84.6%. The authors' figure is undoubtedly lower because at the Mayo Clinic they have for a long time advised thyroidectomy for asymptomatic nodular goiter. As a result, many malignant lesions have been discovered surgically before metastasis occurred.

The practice is to do a neck procedure only when metastatic lesions are thought to be present and to extend the operation into the lateral portion of the neck only as the findings in this region in each individual case might dictate. (Beahrs, O.H., Woolner, L.B., The Treatment of Papillary Carcinoma of the Thyroid Gland: Surg. Gynec. & Obst., 108: 43-48, January 1959)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Navy Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Salivary Gland Tumors

Salivary gland tumors arise chiefly in the parotid and submaxillary salivary glands, but may occur in any portion of the oral cavity or respiratory tract. Mixed tumor and carcinoma are the commonest types affecting these glands with a small group of miscellaneous tumors also found.

While mixed tumor is the most common neoplasm affecting the salivary glands, in this study one of every five tumors of the parotid and more than one-half of the tumors of the submaxillary salivary gland were found to be carcinoma. Fifty-seven percent of all tumors of salivary gland origin occurring in abnormal locations were carcinoma. This relatively high incidence of carcinoma in these tumors is an important observation in considering the management of these lesions. The miscellaneous group of 59 tumors affecting the salivary glands were made up of a variety of lesions with adenocystoma lymphomatosum, or so-called Warthin's tumor, comprising 24 of the cases. Other conditions found were cyst, adenoma, Mikulicz disease, fibroma, hemangioma, sarcoma, and chronic inflammation. These conditions are of interest chiefly as a problem in differential diagnosis and are sufficiently rare that decision regarding their management must be made on the merits of the individual case.

Tumors of salivary gland origin occurring in sites outside the major salivary glands are located almost exclusively in some portion of the oral cavity or upper respiratory tract. In this study, 17 patients had tumors of salivary gland origin arising in the palate; 10 of these had malignant lesions. Other sites affected were the cheek, tongue, lip, antrum, alveolus, orbit, epiglottis, and lung. The most effective treatment for mixed tumor and carcinoma of salivary gland origin occurring in these abnormal locations appears to be radical local extirpation. This may be accomplished either by sharp surgical excision with primary closure or by electrosurgical destruction with secondary healing depending on the size and location of the lesion. In cases of mixed tumor this treatment should be completely effective and in cases of localized carcinoma the cure rate should be high.

The results of treatment of salivary gland tumors occurring in abnormal locations are shown. Of the 12 patients with mixed tumor in this group, 8 were free of recurrence for 5 or more years following surgical removal; 2 patients were lost to follow-up and 2 received no treatment. Of the 20 patients with carcinoma of salivary gland origin, 7, or 35%, were living and free of disease for 5 or more years following surgical extirpation; one patient is still living with disease 6 years after initial treatment; 9 patients died of their disease in less than 5 years, and 3 patients died of other disease in less than 5 years.

Parotid Gland - Mixed Tumors. The number of patients who first present themselves at clinics with recurrence of mixed tumors of the parotid following operation elsewhere suggests tnat enucleation or inadequate

removal of these tumors is rather widely followed. Undoubtedly, this is associated with considerable fear of facial nerve injury. In the present series, 18% or 27 patients of the total of 149 patients found to have mixed tumor of the parotid, had had one or more previous operations. There seems to be little question that enucleation of mixed tumor of the parotid invites the possibility of recurrence and that if the parotid tumor is found to be carcinoma on pathological examination, the best chance of effecting a cure is lost.

The most successful treatment of mixed tumor of the parotid appears to be a complete removal of the tumor with as generous a portion of the parotid gland as the situation permits. To carry this out and to minimize the the possibility of facial nerve injury, the operative procedure must include a dissection of the nerve trunk and its major branches. This may be accomplished by a direct approach to the main trunk of the nerve or by locating a major branch and following this back to the main nerve trunk.

Unfortunately, nearly one-quarter of the patients with carcinoma of the parotid and submaxillary salivary glands seen at hospitals by the authors had advanced inoperable disease. The majority of these patients had had deep x-ray therapy, with about 50% showing varying degrees of regression of their disease for a few months to 2 years.

More recently, the authors have found that malignant tumors of salivary gland origin may be favorably influenced either by hormones or by the combination of hormone and x-ray therapy. This clinical experiment was based on observations made by Nathanson and White who found that increased radiation response could be induced in breast carcinoma by prior administration of estrogen. The application of this finding to salivary gland cancer was prompted by the observations of sex differences in the submaxillary glands of laboratory animals.

Radical excision with exposure of the facial nerve in all tumors of the parotid gland should minimize the danger of facial nerve injury, should result in few, if any, recurrences of mixed tumor, and should be adequate treatment for carcinoma in its early stage.

In carcinoma of the parotid, failure to establish the diagnosis in early cases results in the employment of subradical procedures and invites recurrence. When regional lymph node metastases are established, the opportunity for cure is markedly decreased.

All tumors of the submaxillary salivary gland should be considered as malignant. In proved carcinoma only, the most rigorous primary surgical attack to include radical neck dissection will improve the results in this disease.

The management of tumors of salivary gland origin in abnormal locations presents an individual consideration. A large number of these tumors are malignant and a radical initial surgical extirpation in early cases should result in a high percentage of cures.

Irradiation in the form of deep x-ray therapy affords palliation for varying periods in about 50% of the patients with advanced cancer of the salivary glands.

Finally, estrogen alone or estrogen combined with x-ray irradiation appears to have a place in the palliative treatment of advanced cancer of the salivary glands and further investigation of this method of treatment seems indicated. (Garcelon, G. G., Salivary Gland Tumors - Management and Results: Arch. Surg., 78: 12-16, January 1959)

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Early Care of Multiple Fractures

This discussion concerns itself with three major points: (1) evaluation of the patient, (2) systemic and local alterations in the patient with multiple fractures, and (3) treatment program. It is not designed to introduce anything particularly new; rather, it is intended to bring into focus certain concepts of treatment which are either frequently forgotten or not universally known.

For convenience of discussion, a case of multiple fractures is defined as any patient with fracture of more than one major long bone. Many persons who have such fractures will also have associated injuries to the head, thorax, or abdomen; in some, the fractures will be a secondary problem. Therefore, initial evaluation of the patient with multiple fractures must include a critical appraisal of the patient's general condition, his vital signs, and the extent of all associated injuries. During this early period of evaluation, it is essential that there is an adequate airway and that hemorrhage and shock are under control or are being combated.

An accurate picture of the patient's total problem can best be secured through the team approach. When feasible, appropriate members of involved surgical specialties should be enlisted to evaluate all phases of the patient's injuries. The over all management of the patient during evaluation should be handled as suggested by McCarroll by that member of the team whose specialty concerns itself most imminently with the welfare of the patient. In this regard, except for life-threatening hemorrhage from major arterial damage to the extremities, fracture care per se takes low priority. Even in the case of open fractures, definitive orthopedic care must await treatment of other more urgent problems involving the head, thorax, and abdominal viscera. Diagnostic roentgenographic studies of the extremities are contraindicated until the patient becomes predominantly an orthopedic problem or until it is deemed safe to proceed with definitive fracture care. During the early period of total patient evaluation, splinting of fractures can be easily accomplished without the need or benefit of x-rays.

Changes which occur in the patient with multiple fractures are both local and systemic. The local changes are variable and deal essentially with principles of individual fracture care. The systemic changes are rather constant in their occurrence in every patient of this type and may be grouped as to type and time of occurrence as follows:

I. Early systemic changes (up to 48 hrs.)
   A. Circulatory changes
      1. Severe blood loss (which may lead to shock)
      2. Shock due to trauma to tissue or neurogenic factors

II. Late systemic changes (after 48 hrs.)
   A. Renal dysfunction
   B. Metabolic changes
      1. Protein
      2. Carbohydrate
      3. Mineral

In view of the discussion of the changes which occur in the patient with multiple fractures, a treatment program is outlined. The principles governing the care of such a patient can be divided into those of a local and of a general nature. The local treatment of individual fractures is not an essential part of this discussion, but it is worth while to emphasize that proper splinting of fractures is essential to prevent the development or aggravation of shock; it will serve as adequate local treatment while the general condition of the patient is evaluated and restored to an acceptable state. In addition to splinting, first aid treatment of local open wounds of the extremities may be accomplished. During the resuscitation stage, this consists simply of control of hemorrhage and application of sterile dressings in order to avoid secondary contamination. Judiciously applied compression dressings are also of help in controlling interstitial hemorrhage and edema.

The program of general supportive care is headlined by the all-important principle of maintaining an adequate airway in order to preserve a live patient. The indications for tracheotomy should be carefully weighed and if injuries to the face, chest, or head compromise a free exchange of air, tracheotomy should be performed without hesitation.

Analgesics and narcotics for the control of pain are often essential in order to prevent aggravation of shock. In the presence of minor injuries to the head when the patient is conscious, Demerol or codeine may be given for pain. However, each case must be critically individualized in the event of associated severe injuries to the head. The administration of morphine should be avoided in any case because of its miotic effect which deprives the surgeon of a helpful aid in evaluating injuries to the head.

Because nearly every patient with multiple fractures is either in some degree of shock or is in impending shock as a result of circulating blood loss and other factors, replacement therapy must be started at once. It is far better to anticipate the development of shock and treat it prophylactically than to wait for it to occur. This is particularly true if subsequent surgery is anticipated. In the case of fractures, whole blood is the substance of choice, but plasma expanders, such as dextran or serum albumin may be used early when blood is not available. If the patient is in shock, replacement therapy should continue until blood pressure and pulse have returned to a reasonably normal level and are stable. In those cases of impending or potential shock, replacement therapy should be given according to estimates of blood loss.

Following resuscitation and general supportive therapy, it is the responsibility of the fracture surgeon to conduct a thorough examination of the patient's musculoskeletal system. Diagnostic x-ray studies are now permissible and these should be as complete as the patient's condition and transportability allow.

As soon as the condition of the patient allows, all open wounds must be treated as emergencies. This is particularly urgent in the case of open fractures where the threat of disabling chronic bone infection is so real. In these days of drug-resistant staphylococcal infections, even the ultimate outcome of the patient's life may depend upon proper early care of these open wounds. Thorough debridement and cleansing according to sound surgical principles is essential; whether the wounds are closed primarily or secondarily will vary with the local problem as well as with the individual surgeon. The goal is to convert all open wounds into clean closed wounds as soon as possible.

In all patients having sustained severe injuries, particularly those with excessive damage to soft tissues, those having preexisting renal disease, and those of older age groups, careful attention must be paid to the amount of urinary output and its specific gravity. Fluid intake and output must be accurately charted. The possibility of severe renal dysfunction is always present following severe trauma and development must be anticipated, recognized, and treated because, if unrecognized or improperly treated, renal shutdown with its resultant alterations in fluid and electrolyte balance may lead to a fatal outcome.

A concept often overlooked in the care of this type of patient is that of reevaluation. It is not uncommon for major joint derangement or some other significant injury to an extremity to go unnoticed for a long period simply because at the initial examination, the patient's and surgeon's attention were drawn elsewhere. Failure to recognize associated trauma can be obviated by repeated thorough physical examination of the patient at regular intervals.

Last, but not any less important, is treatment of the psychological aspects of the patient having sustained multiple fractures. This applies in

particular to those individuals whose injuries will demand prolonged immobilization and extensive rehabilitation. This important aspect of treatment must constantly be kept in mind to the extent that all such patients are given daily prophylactic psychotherapy by their doctor in the hope of avoiding the development of more complex and recalcitrant mental conditions requiring aggressive and costly psychiatric care. (Coleman, S. S., Early Care of the Patient with Multiple Fractures: Am. J. Surg., 97: 43-48, January 1959)

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Care of the Patient with Multiple Injuries

There can be no rigid rules for the management of all extensively injured patients. The early recognition and management of important unsuspected lesions, however, will help to prevent additional superimposed trauma which, in itself, may make the difference between life and death or between mere survival and independence. The most important immediate problems consist of recognizing or establishing an adequate airway, preventing further hemorrhage, replacing blood, and avoiding damage by injudicious movement of the patient.

Immediate Measures

The movement of the patient from the site of injury can, in itself, be the actual cause of death. Movement and transportation is best undertaken by trained persons. Transportation of fracture cases with the simplest type of side-splinting is probably the best. The control of hemorrhage by direct pressure compression bandages as opposed to a tourniquet is probably also best. Movement of the patient from the site of injury to the hospital should not be done with speed but with great care and gentleness. Sudden starts and stops, bouncing over rough roads, and swerving around corners should be avoided.

Extablishment of Extent of Injury. The physician who first examines the patient should do a complete systematic rapid physical examination. As with any physical examination, looking for the normal immediately reveals the abnormal. He should look, he should feel, he should smell (alcohol, vomitus, feces, urine, and acetone), and he should listen.

A simple recording of the clinical findings is essential because the clinical course of the patient and progressive changes of signs and symptoms are often the actual key to correct diagnosis. Recording of negative findings is important as they may later become positive. This is particularly true of intra-abdominal, head, and chest injuries.

Certain traumatic conditions may be obvious. However, some serious injuries are at times undetectable on initial examination. Visceral injuries of this nature frequently manifest themselves hours after the initial trauma.

They should be suspected and specifically looked for in order for the physician to be ahead of their devastating possibilities if they are found out too late.

The orthopedist is taught to suspect a combination of injuries in certain types of trauma. For example, a fractured patella and dislocation of the hip are often combined. The os calcis fracture is also often associated with a central dislocation of the hip or a fracture of the spine or of the base of the skull or both. A crushed pelvis is frequently combined with a rupture of the posterior urethra. Chest injuries are often associated with a ruptured spleen or a diaphragmatic hernia. Penetrating chest wounds are associated with injuries involving abdominal viscera. These combinations should be considered in order not to be overlooked.

Asphyxia, severe hemorrhage, and shock are common features in multiple injury cases. Immediate recognition and treatment are necessary. Open airway is essential to life and should be established at once. Simple manipulation of the tongue, mandible, or both, or changing the position of the head and neck may be all that is necessary. Suction or wiping out the upper airways may be used to remove blood or mucus from respiratory passages. At times, however, a tracheotomy may be indicated. In those patients who do not have a cough reflex for clearing the upper air passages, suction and the administration of oxygen through a tracheotomy tube may be necessary.

Gross hemorrhage is the most common and often the simplest of all the conditions to alleviate. The application of local pressure, the use of a hemostat, and tying off the bleeders are the usual methods of controlling bleeding. Concealed hemorrhage in the thorax, abdomen, or retroperitoneal space may cause death. In the severely injured patient, blood replacement therapy should be initiated at once and while replacement of blood is being brought about a more careful evaluation of the patient is easier and more surely apt to save his life—continued massive hemorrhage is not compatible with life for even a short duration of time.

As soon as an adequate airway has been established, hemorrhage arrested, and blood replacement started, the obvious fractures should be splinted to prevent further trauma and shock. Major fractures, strangely enough, are commonly overlooked. Minor fractures and, frequently, dislocations of the major joints may be undetected.

Shock of some degree is associated with all multiple injuries. The main cause of shock is often loss of circulating blood volume. Replacement therapy, to be effective, must be prompt. It is best done by the use of whole blood, which increases circulating fluid volume, as well as the number of erythrocytes, to handle oxygen requirements in the tissues. Saline solution is invaluable as a temporary agent for raising the blood pressure only while awaiting plasma or whole blood. It should be used only in emergencies because it leaves the circulation rapidly and takes plasma

protein with it. Trendelenburg position of the patient, elevation of the extremities, and the administration of oxygen are all useful adjuncts.

Some of the diagnostic problems are clarified through a complete history and a careful physical examination. The knowledge of the mechanism of injury may give a real clue to concealed pathological changes. The obvious injuries must not divert the concentration of the careful examiner and thus allow him to overlook other conditions, such as serious spinal, intra-abdominal, or intrathoracic injuries. Fractures of the extremity or bleeding from head lacerations often attract attention to such a degree that frequently these are investigated too thoroughly by x-ray and other studies while the less obvious but infinitely more important areas and serious internal injuries may be undetected.

The physical examination must be quick, gentle, and without undue exposure. X-Rays should be taken only when necessary and with minimum movement of the patient. It is possible for movement from a stretcher to an x-ray table to produce a profound circulatory collapse.

Initial Management of Specific Types of Injury. Chest injuries require priority in treatment of any serious disturbance of the cardiovascular physiology. Potential bronchial secretions, sucking wounds, pneumothorax, massive bleeding into the pleura, and cardiac tamponade all may lead to profound cardiorespiratory changes requiring immediate treatment. Thoracic injuries should be treated before other operative procedures are undertaken, and when combined abdominal-thoracic injuries are encountered, the thoracic portion is undertaken first.

Blunt and penetrating types of trauma may produce various types of lesions in the abdomen. A careful local examination of the abdomen should be undertaken, particularly in an unconscious patient. All penetrating wounds of the abdomen should be explored as soon as the patient's general condition permits. Watchful waiting is dangerous. Blunt injuries to the abdomen may be serious. A ruptured spleen or bladder, laceration of the liver or intestine, mesenteric hemorrhage, or injury to the pancreas may present diagnostic difficulties. Lacerations of the kidneys and serious retroperitoneal hemorrhage may be associated with injuries to the spine.

Urine specimens should be obtained promptly in all seriously injured patients. The presence of blood indicates some injury; however, the degree of hematuria is not necessarily indicative of the degree of the damage. Most urinary injuries can be treated conservatively. Rupture of the ureter, bladder, and urethra require early initial repair to prevent urine extravasation.

Peripheral nerve functions should be determined in examining wounds of the extremities. Simple tests for nerve injuries in both the upper and lower extremities are well known and detection is relatively easy.

Debridement of open wounds, reduction and immobilization of fractures, early amputation of all devitalized parts, and other procedures all play a major part in the rehabilitation of the extensively injured patient.

The use of a broad-spectrum antibiotic and whole blood, debridement of devitalized tissue, and the use of prophylactic antitetanic serum and toxoid therapy are important. (Aufranc, O. E., Care of the Patient with Multiple Injuries: J. A. M. A., 168: 2091-2094, December 20, 1958)

(OccMedDispDiv, BuMed)

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Wanted: The Practice of Preventive Medicine

The term preventive medicine is fundamentally concerned with health problems of the individual. Preventive medicine deals with the immunization of the individual against certain communicable diseases, the state of his nutrition, the early treatment of incipient disease, and the application in each case of the available skills of medicine and surgery and of community organization for the prevention of the sequelae of serious illness.

The summons to the practice of preventive medicine is evident in the continuing existence of acute infectious, chronic, and mental diseases; in the findings from medical surveys of ostensibly healthy people; and in the character of demands on physicians, hospitals, and other agencies concerned with health.

Infectious disease is still a world wide health hazard, causing more than one-half of the deaths and probably an even higher proportion of the sicknesses of mankind. An appreciable morbidity and mortality rate continues for various forms of pneumonia and other respiratory infections, meningitis, septicemia, intestinal infections, and numerous virus diseases. Many communicable diseases are yet uncontrolled, even though basic knowledge would appear to allow successful control.

The older age groups, among whom the chronic diseases have long been a major health problem, now constitute 10% of the population. Their number increases yearly. The four most common and serious threats to life in later years are: (1) blood vessel breakdown, (2) cancer, (3) arthritis and rheumatism, and (4) nervous and mental disorders. In all of these threats, it appears that two basic factors are significant: (1) nutrition, and (2) prolonged stress or exhaustion. Both the investigation and application of promising forms of prevention of disorders of aging patients require attention.

Approximately half of the nation's hospital beds are said to be occupied by patients with mental disease. One of every 20 adults is likely, at some time during his lifetime, to be a patient in a mental hospital; and additional one or two of that number at some time will be substantially disabled by mental disabilities which do not require care in an institution.

The records of the Veterans Administration Hospitals suggest that the incidence of severely handicapping emotional disturbances is high. Estimates are that 20 to 25% of industrial workers are maladjusted. They

are either dissatisfied with their work, unhappy at home, angry with the boss, disturbed by financial insecurity, or just plain unstable. There is reason to believe that the so-called minor emotional disturbances, unless corrected, are potent producers of subsequent human misery and inefficiency.

The results of health surveys of workers show a need for more effective practice of preventive medicine. In one industry, more than half of the workers had errors in visual refraction, nearly a third had dental caries and gingival infection, and an appreciable number were obese or had malnutrition, psychoneurosis, or anemia.

The shortage in the working force—all of it, from the supercharged Phi Beta Kappas to the laborer in the bull-gang—constitutes a demand for any step which keeps the workers on the effective list. Substantial absences from work cannot be tolerated. Once upon a time, vacancies could be filled by shifting a few men or hiring extra workers to perform hand operations that practically anyone could do. Currently, most of the workers are specialists, trained to operate complicated equipment. The capital investment per employee has increased rapidly (automation); this investment now is so large in some industries that the illness of a single worker may be as costly as the absence of a movie star in the shooting of a big film.

Trends in the character of service provided by community hospitals point to an increasing recognition of the role of prevention. Such developments are: diagnostic clinics, consultation services, periodic examinations for the ostensibly well persons including screening procedures, child welfare and child development clinics, prenatal and postnatal clinics, preventive dentistry and oral hygiene, follow-up clinics, nutritional advice and supervision, social service departments, and programs for convalescent care and home care. These developments have their raison d'être and their accomplishments in health maintenance.

There must be wider clinical practice of preventive medicine because the job cannot be done alone by those specializing in public health, pediatrics, industrial medicine, or in other forms of practice concerned with preventive medicine in particular. Some such specialized forms of practice do not provide the personal contact with the patient which is needed if certain disease processes are to be avoided.

The clinical practice of preventive medicine is, of necessity, the answer to obesity. The few corpulent persons who do achieve and maintain an optimal weight usually do so under guidance of a personal physician—not because the fountainheads of nutritional knowledge say obesity is a serious health hazard. Thiamine deficiencies can be prevented by adding thiamine to bread, but unneeded calorie consumption cannot be prevented by any action on the part of the flour mill, low calorie "health breads" notwithstanding!

How well is the practice of preventive medicine doing, and what are its roadblocks? Much of current practices by physicians is actually in the

field of prevention. The physician who provides sound nutritional help for his patients, quietly educating, countering the claims of food faddists and purveyors of special nostrums offered for nutritional purposes, is practicing prevention of disease. The gastroenterologist is practicing prevention when he stops the habitual use of cathartics by the patient with a bellyache and thus allows the patient's colon to fill and empty, to function as a normal and pain-free structure. The cardiologist does the same when he instructs the rheumatic fever patient in the control of group A beta hemolytic streptococcal infections. The excision of precancerous lesions of the skin, premarital instruction. and judicious attention to anxiety states, likewise are accepted phases of preventive medicine.

The great majority of doctors would welcome an opportunity to take an active part in disease prevention, but they are so snowed under with routine treatment of trivialities that the urge quickly dies and consciences become hardened. Physicians accept prevention of illness and injury as a worthy desideratum. Why the lag and frustration in prevention? Examine some practical reasons why more professional lives are not spent in the millennium of prophylaxis. Awareness of this is necessary to cope with the responsibilities.

There is a lag in applying "know-how" in human affairs. There are many experiences to show that one, two, or more generations may elapse before significant health knowledge gleaned from a laboratory or reported from clinical experience is widely and effectively applied. Chlorination of drinking water had to be sold—now fluoridation. Garland has called the phenomenon "unassimilated progress." Aside from a continuing need for more knowledge, many of the difficulties of any generation arise from its failure to apply the knowledge which it actually possesses; thus, unassimilated progress in avoiding disease.

The influence of housing, air pollution, working conditions, climate, temperature, light, color, and noise are said to be important to health. Exactly what is known about the operation of these factors?

Preventive medicine should not be isolated from the main current of medicine for training purposes. The student learns in practice that many phases of a physician's responsibility go hand in hand. Because the pediatrician has learned to stress the normal development of children and the avoidance of disease as his best contribution, there seems to be hope that practitioners of other specialties can broaden their interests and. delight in the recognition and encouragement of health along with the cure of disease in their patients. (McGee, L. C., Wanted: The Practice of Preventive Medicine: Postgrad. Med., 24: 475-481, November 1958)

(OccMedDispDiv, BuMed)

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OCS Program for Medical Service Corps

A limited number of vacancies in the Medical Service Corps will be filled by appointment of qualified enlisted applicants to the grade of Ensign, 2305 (Supply and Administration Section). Eligible enlisted members of the naval service on active duty (HMC's, DTC's, HM1's, and DT1's) may apply to the Chief of Naval Personnel (Pers-B6221) under the Officer Candidate School Program described in BuPers Instruction 1120.29.

Selected enlisted applicants will be ordered to the U.S. Naval Schools Command, Newport, R.I., designated as officer candidates within their present pay grades, and provided a 4 months' indoctrination course. Upon successful completion of indoctrination, selected candidates will be appointed as Reserve officers in the grade of Ensign, Medical Service Corps and will be required to serve on active duty in commissioned grade for 3 years from date of acceptance. Opportunities will exist for voluntary extensions of active duty in accordance with the needs of the service and it may be possible for some outstanding officers to augment into the Regular Navy.

It should be noted that this program is not related to the annual in-service procurement program for Regular Navy as outlined and described in BuPers Inst. 1120.15C. Significantly, candidates for the OCS program may be either USN or USNR, may be eligible up to age 34-1/2 at time of application and are not required to compete in Officer Selection Battery and written professional examinations. (MSC Div, BuMed)

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Courses at U.S. Naval Medical School

A short tutorial course in Bacteriology will be given at the U.S. Naval Medical School from 9 to 13 March 1959, inclusively. The course is designed to acquaint personnel of the Navy assigned to clinical laboratories with certain new procedures and techniques as applied to biochemistry. The components of the course will consist of identification of pathogens through fluorescent antibody techniques, isolation and identification of staphylococci and a cytochemical test for Mycobacterium tuberculosis. Also included in the course will be a discussion of current trends in clinical mycology laboratory and visits to laboratories and other departments of the Naval Medical School

The type of instruction provided will be that of practical laboratory exercises and demonstrations supplemented by discussions.

Also to be given from 16 to 20 March 1959 inclusively is a short course in Parasitology. The purpose of this course is to acquaint Medical officers

and Medical Service Corps officers assigned to laboratories, particularly in parasitology, with a current evaluation of diagnostic procedures, epidemiology, pathology, prophylaxis and treatment of intestinal parasites and blood and tissue parasites. Included in the course also will be the identification of intestinal parasites such as protozoa, trematodes (including liver flukes), cestodes, nematodes. In addition, practical exercise in diagnosis and recognition of blood and tissue parasites, such as plasmodia, trypanosomes, leishmania, trematodes, cestodes and nematodes.

Instruction in the above course in parasitology will consist of practical laboratory exercises in diagnosis, recognition, demonstrations, lectures, and discussions.

Application for either course should be submitted in accordance with current directives. Eligibility is necessarily limited to officers of the Medical Corps and Medical Service Corps assigned to laboratories. Requests from interested personnel must be received in the Bureau of Medicine and Surgery prior to 20 February 1959. (ProfDiv, BuMed)

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From the Note Book

1. Flag officers of the Navy Dental Corps attended a conference at the Dental Division, BuMed, January 26-28, 1959, to discuss programs and policies for the Navy Dental Corps for the coming year. (TIO, BuMed)

2. CAPT R. B. Wolcott DC USN, U. S. Naval Training Center, Bainbridge, Md., recently presented a lecture entitled "Amalgam Treads Among the Gold" at the meetings of the Lincoln, Nebraska Dental Society and the Omaha, Nebraska District Dental Society. (TIO, BuMed)

3. CAPT A. K. Kaires DC USN, U. S. Naval Station, Sangley Point, P. I., recently presented a lecture on "A Coordinated Plan for Prosthodontic Treatment" at the meeting of the Philippine Dental Association in Manila. (TIO, BuMed)

4. Two of the paths for an enlisted man to take for a commission in the Navy are under the Navy Enlisted Advanced School Program and the Navy Enlisted Scientific Education Program. It is planned that up to 600 enlisted men will be selected annually for college training leading to baccalaureate degrees. (NavNews, January 15, 1959)

5. The U. S. Navy Medical Research Unit No. 2 reports that the Asian variant influenza strains isolated early in December from the epidemic

occurring in Taiwan appear to be "identical antigenically with the April 1957 and November-December 1957 strains." No outbreaks of respiratory disease confirmed as influenza by isolation of virus have been reported in the United States so far this winter. (PHS, HEW)

6. During a period of 15 months, 474 cases of anemia in late pregnancy and the puerperium were investigated by sternal puncture, blood counts, and serum-iron estimations. In 90 cases a megaloblastic marrow was found, 28 of them in the puerperium. All cases were treated with folic acid. The reticulocyte peak and the drop in the serum-iron level reflected the response to treatment in a majority of patients. (The Lancet, 27 December 1958; C. Giles, E. M. Shuttleworth)

7. The course of 30 patients whose diagnosis of documented primary hypertension was established prior to 25 years of age is described. The results do not support the view that the disorder is necessarily more severe when it is contracted in youth. (Ann. Int. Med., December 1958; G. A. Perera, M. D.

8. The designation mucocutaneous-ocular syndrome is used in this article as a general collective term to include Behcet's syndrome, severe erythema exudativum multiforme, Stevens-Johnson syndrome, and ectodermosis erosive pluriorificialis. These syndromes sometimes involve internal organs. Usually the respiratory tract or the central nervous system is affected but a review of the literature reveals that involvement of the gastrointestinal tract is not infrequent. (Am. J. Med., December 1958; J. Bøe, M. D., J. B. Dalgaard, M. D., D. Scott, M. D., Bergen)

9. Kanamycin, a broad spectrum antibiotic, isolated from cultures of Streptomyces kanamyceticus by the Japanese, has been evaluated as an agent for intestinal antisepsis. Kanamycin is one of the most effective agents yet studied for preoperative preparation of the colon. (Surg. Gynec. & Obst., January 1959, I. Cohn Jr., M. D., A. B. Longacre, M. D.)

10. This article discusses briefly some of the problems in the surgical treatment of biliary tract disease and suggests a classification of the stages of biliary tract disease as encountered at operation. (Am. J. Surg., January 1959; F. Glenn, M. D.)

11. Postoperative chronic osteomyelitis of the hip joint in adults is discussed in Arch. Surg., January 1959; J. Michels, M. D. et al.)

12. The diagnosis and treatment of psychocutaneous disorders are discussed in G P, January 1959; P. F. D. Seitz, M. D.

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SUBMARINE MEDICINE SECTION

Sport Diving Doctors

There will be a few openings in July 1959 for doctors having an interest in sport diving to serve with units engaged in underwater operations. These billets are located in Virginia, Florida, and Southern California. The responsibilities will include the care of these personnel and participation in the instruction programs. Duty with these units will entail some travel, but ordinarily not long absences from the home base. Any who like the outdoor life and activities around the water front should enjoy this duty particularly well.

Those assigned will be given an eight-week course of instruction in diving medicine which covers diving technic and practices, underwater physiology, and the recognition and care of diving casualties. The course will be given in Washington, D. C. during July and August. The tour of duty is for two years but no extension of service obligation is entailed for this training. Applicants from the East Coast are particularly desired. Those who are interested are urged to volunteer now to avoid last minute confusion over orders. Write to Chief, Bureau of Medicine and Surgery (Attn: Code 75), Navy Department, Washington 25, D. C.

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Nuclear Power Program

Training for duty with nuclear powered submarines has been markedly shortened and the over all time spent in training and in duty aboard such ships has been correspondingly reduced. Experience has demonstrated the feasibility of condensing the essential academic work into an intensive seven-week program. This will be included in the six months basic training in submarine medicine for those going into the nuclear power program. It will be followed by a period of practical training at an Atomic Energy Commission reactor site. Following this, as needed by the submarine building program, the doctors will serve aboard nuclear powered submarines.

The basic six months course in submarine medicine will continue to include diving medicine (instead of the radiation biology) for those destined to serve with diesel powered submarine squadrons and diving organizations. This realignment of training is based on experience and the desire to reduce

the over all time commitment. It will not abolish the opportunity for those who desire a more extensive academic type of training in radiation biology to attend the AFSWP sponsored course nor the postgraduate course at the University of Rochester.

Those entering the nuclear power program via the shorter course may expect to be well grounded in the aspects of those problems generally grouped under the term "Health physics." This is a training that will prove useful in a practical way in many circumstances a physician will encounter. Anyone interested in additional information should write Director, Submarine Medicine Division, Bureau of Medicine and Surgery, Washington 25, D. C.

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Diving Medicine

One morning's mail brought the following:

Case #1

International cooperation was displayed at San Diego recently when a Mexican scuba diver was flown from Acapulco for treatment aboard the submarine tender NEREUS. Red tape was slashed to permit his being brought in without the usual visas and other arrangements.

The diver was using an air scuba for a dive to 155 feet. Time of dive and decompression schedule are not available. Shortly after surfacing he suffered convulsions and was placed in a portable recompression chamber. He spent 25 hours in this chamber during which time he was flown to San Diego. There he was transferred to the recompression chamber of NEREUS and gradually decompressed over a period of 60 hours. At the end of decompression he was partially paralyzed in one leg and completely paralyzed in the other. His comment: "Legs or no legs, I owe my life to the Navy. Let me be a good example of why divers should not be careless of safety rules."

Congratulations to LT Charles Glazzard MC USNR, Medical Officer, Submarine Squadron Three and HM3 Lawrence Stokes, diver corpsman, and the personnel on the outside who kept the chamber operating.

Case #2

The Calgary Sub Aquatic Club of Calgary, Alberta, checks in with this one. While diving in a limestone sink having visibility to 70 feet and a depth of 160 feet, a doctor began to feel dizzy at about 90 feet and was next observed at 120 feet, tangled in his line, mouthpiece out of his mouth, lying motionless. He was brought to the surface quickly and after 3 minutes of artificial respiration and two days rest in a hospital "he is all set to go again." Comment: A medical education takes so long and costs so much, one wonders if this doctor had not better take a second look at this business. At least, the club is getting some copies of "Submarine Medicine Practice" to read.

DENTAL SECTION

Mouth Preparation for Removable Partial Dentures

The third in a series of slide lectures prepared by the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md., is now available for loan on a short term basis. This study set consists of 74 35-mm. colored slides, a bound narration in lecture form, slide file, hand viewer, and carrying case packaged to facilitate their use. Ten sets are available.

The use of either this material or the previous lectures, Remount Technique for Occlusal Correction of Complete Dentures and Non-Neoplastic Oral Lesions, should be requested in the manner indicated below:

From: _____

To: Commanding Officer, U. S. Naval Dental School (Code 7), National Naval Medical Center, Bethesda, Md.

Subj: Illustrated lecture; request for loan of

1. It is requested that I be granted the loan of the illustrated lecture _____ for approximately two weeks, commencing on or about _____ 1959, expiring not later than two weeks from the date of receipt.

2. I will exercise due care in handling and stowing this training material and will return it in the original carton with the enclosed franked address labels attached, at the expiration of the loan period.

_____
(Signature)

ADA Membership Reaches New High

Membership in the American Dental Association reached 91,488 as of November 30, 1958. The figure represented an increase of 2,184 from the same date one year ago and an increase of 2,143 over the 1957 total membership figure of 89,345.

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Applicants Desired for Dental Technician Training

Applications are desired for courses of instruction in General Dental Technician, Advanced, Class "B" and Prosthetic Dental Technician, Advanced, Class "B". Applicants must be qualified in accordance with BuMed Instruction 1510.2B. Eligible Technicians will be considered for selection to a class convening approximate to their rotational phase in accordance with current SHORVEY/SEAVEY procedures.

Requests are desired from eligible personnel who desire a course of instruction in Dental Technician, General (Basic) Class "A" which will lead to a change to dental rating. (Reference BuMed Instruction 1510.6A)

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RESERVE SECTION

Annual Meeting of Aero Medical Association

The Aero Medical Association will hold its 30th Annual Meeting at the Statler Hotel, Los Angeles, Calif., during 27, 28, and 29 April 1959.

The theme of this meeting will be "Aviation Medicine" with the scientific program planned for three full days of sessions on subjects considered to be excellent training for all Armed Forces Medical Department officers, particularly those whose anticipated mobilization potential is related to naval aviation medicine.

Eligible inactive Reserve Medical Department officers have been authorized to receive one retirement point credit for each day's attendance, provided they register with the military representative present.

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Promotion Point Credit

1. Twelve promotion points are creditable for each fiscal year since 30 June 1949 in which participation in present grade in the Naval Reserve was at the following minimum levels:

a. Fiscal Year 1958 and subsequently (effective 1 July 1957): Points are creditable for meeting the participation requirement of either subparagraph (1) or (2) below:

(1) Completion of 14 days' active duty, active duty for training, and/or periods of appropriate duty; or

(2) Attendance at 75% of drills prescribed (48 or 24 drills) in the table of organization for the unit or units in which enrolled, but in no case less than 18 drills. Drills attended as an instructor in a Naval Reserve officer school are included. Drills attended as a student in a Naval Reserve officer school are not included.

(a) The number of drills attended is the number reported on Quarterly Naval Reserve Drill Reports (NavPers 1259).

(b) An officer's percentage of attendance is determined by dividing the total number of drills attended by the total number of drills prescribed for the quarters in which the officer is enrolled. If an officer is enrolled in more than one unit during a year, the divisor in this computation is computed by multiplying the total number of quarters in which he was enrolled by the number of drills prescribed per quarter for the unit having the least number of prescribed drills.

b. Fiscal Years 1956 and 1957 (1 July 1955 through 30 June 1957): Minimum participation requirements were the same as in paragraph 1 a above, except for the following:

(1) The minimum number of drills was 12 instead of 18.

(2) Drills attended as either an instructor or a student in a Naval Reserve officer school course were included in drill attendance.

c. Fiscal Years 1950 through 1955 (1 July 1949 through 30 June 1955): Completion of the requirements for a year of satisfactory Federal service through accrual of 50 retirement points, provided that at least twelve of the retirement points were earned by active duty, active duty for training, drills, or appropriate duty. For officers having anniversary years other than the fiscal year, the twelve points in fiscal year 1955 were creditable for the portion of a year between anniversary date and 30 June 1955, provided that in that period at least 50 retirement points were accrued, at least twelve of which were earned by active duty, active duty for training, drills, or appropriate duty. (BuPers Inst. 1416.4B)

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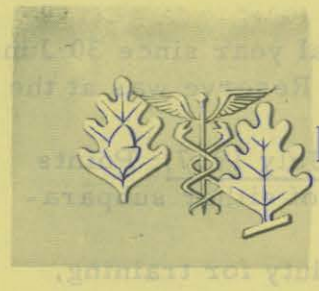

PREVENTIVE MEDICINE SECTION

Parasitic Infestations

There can be no doubt that a parasitic mode of life presents certain attractions: for one thing, there is the guarantee of a comfortable climate with equable temperatures at all times of the year; again, there is no need for foraging, or for work of any kind—nothing to do but to feed, grow, and reproduce the species in which direction most parasites are very highly successful. There is one species of nematode in the rat, the male of which actually lives as a parasite inside the uterus of the female. Progeny in most instances are born in astronomical numbers; in the case of Ascaris lumbricoides, some 200,000 eggs are produced per day. All of this was intended for the sparsely scattered communities of early times and one source of trouble over the attempted eradication is the enormously enhanced seeding of infection due to the crowding of animals under agricultural conditions.

In view of the slender chance of meeting another host, it is necessary for all parasitic worms to be able to await their time, a propensity which is achieved in a surprising number of different ways. The example that has just been used, A. lumbricoides, follows one of the rather ordinary ways in that the eggs which it produces, after they have become embryonated, are exceedingly resistant to the effect of adverse conditions so that they may wait for months or, under optimum conditions, even for years (12-1/2 years in experimental observations at Weybridge) for the arrival of that lucky chance when they are ingested by a pig or a man.

Another way to tide over a period of waiting is for the larval worm to enter into an invertebrate intermediate host, as do some of the exotic flukes that are able to infest both man and animals; those infective forms are able to wait indefinitely during the life of the intermediate host. And the lives of some of these invertebrate creatures are much longer than is popularly supposed; for example, the earthworm, Lumbricus terrestris, is thought to have a span of life of some 10 years, throughout which time it may carry certain nematode infections.

Yet another way in which larval worms tide over a period of waiting for a new host is to develop to a certain stage in the body of a vertebrate intermediary and await the attack of a carnivore. It is in this voracious way

that man becomes infested with his two large tapeworms, Taenia saginata and T. solium. There could be no more certain evidence than this to meet the vehement arguments of some food-reform friends that man was originally a vegetarian. These guests have nowhere other than in man to live and their association with him must go back through millions of years of his subsistence on the flesh of pigs and cattle.

One curious point should not be overlooked—that in no instance is it possible for these parasites to give rise to successive generations in one and the same host; a new host must always be found in which the worm may grow to maturity. It follows, therefore, that every individual worm must spend some time between hosts; it is here that the sanitarians have their opportunity to put an obstacle in the way of transference.

One other character which helps these parasites to keep a footing in civilization is the length of the lives of parasitic individuals. This is very surprising, there being good evidence to show that some individual representatives of T. saginata may live for 30 to 40 years: human hookworms are known to live for some 12 years and the human blood fluke Schistosoma mansoni up to 40 years. During the whole of their long lives, these parasites are disseminating infective material at a tremendous rate.

It is of some practical importance that infected persons, after one or two unsuccessful attempts to rid themselves of their taenoid companions, may be content to carry them for years, or that in some instances, they may not be aware of their infestation. One of the privileges of a parasitologist is to carry out experiments on himself; because his guest will not burden him with a family, he knows that he will house no more than the invited number. In illustration of this point of unawareness, Leiper made a report of three experimentalists who, for the purpose of studying the anemia associated with infection of Diphyllobothrium latum, swallowed the viable plerocercoids from fish caught in the Swiss lakes. At the end of the experimental period, antihelminthic treatment was applied and complete worms were recovered corresponding to the numbers of plerocercoids swallowed in all but one case where only three worms were expelled although four plerocercoids had been swallowed. As the infective stages of parasites often fail to develop in the experimental host there was nothing remarkable about recovering one fewer than had been put in and this individual host thought himself freed from the infection. It was surprising, therefore, to discover 5 years later that the worm was still there.

In the same connection, Dr. P. A. LeRoux has communicated a personal observation of a living tapeworm segment having been seen by him to fall from the clothing of a man while playing an outdoor game. In common with some other cestode segments, those of T. saginata behave almost like individual organisms, crawling away from a fecal mass, or as in this instance, making their way independently through the anal sphincter and into the environment of the host. This constitutes one of the important ways in which infection

may be widely distributed and it easy to see how farm workers carrying T. saginata, for instance, may distribute the segments onto the pastures perhaps over a period of years as they go about their daily work.

While it is for the medical profession to improve existing methods and apply treatment for the eradication of these cestode parasites from infected individuals, it is for the veterinarians and the sanitarians to direct their attention to the application and the improvement of known means of preventing the transference of these parasites from animal to human host. (Taylor, E. L., D. V. Sc., Symposium on Some Lesser-Known Diseases Common to Man and Animals; (a) Parasitic Infestations: Roy. Soc. Promot. Health J., 78: 664-665, September - October 1958)

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Resistance of Beta-Hemolytic Streptococci to Tetracycline

The tetracycline drugs have been referred to frequently as alternatives in the treatment of beta-hemolytic streptococcal infections in those cases hypersensitive to penicillin or erythromycin. This article demonstrates that strains of Group A, Type 12 streptococci have appeared which are resistant in vitro to therapeutic levels of tetracycline.

The oldest child of a family of six developed fever, slight sore throat without dysphagia, and nonproductive cough 3 days after a coryzal illness that involved all members of the family. Examination of the throat revealed only moderately enlarged tonsils and nontender anterior cervical lymphadenopathy. Because a throat culture taken during the previous illness was negative for beta-hemolytic streptococci, therapy was begun with tetracycline, 750 mg. per day, and continued for 5 days. Throat cultures taken on the first, third, and seventh days after onset all contained numerous colonies of beta-hemolytic streptococci which were classified as belonging to the viridans type because of the lack of reaction with grouping sera, minimal degree of hemolysis and marked resistance to tetracycline. One week after the onset of this illness, three other members of the family developed fever and moderate sore throat. Pharyngeal cultures all contained numerous colonies of beta-hemolytic streptococci, Group A, Type 12, sensitive to penicillin and erythromycin but resistant to all tetracycline drugs.

Because of the occurrence of another family outbreak in which tetracycline therapy failed to relieve symptoms, a culture survey was done in the school attended by children from both households. From a total of 131 cultures, Group A streptococci were isolated in 40. Thirty-eight of these strains were Type 12 that were found to be resistant to tetracycline, oxytetracycline, or chlortetracycline in concentrations greater than 30 mgm.

Streptococcal isolations were done on 5% sheep blood agar plates. Antibiotic sensitivity was initially determined on all strains by the disc method. Representative strains were studied further by the tube-dilution technique with purified antibiotics. The Type 12 strains isolated were all resistant to tetracycline concentrations of 50 mgm. but were sensitive to penicillin and erythromycin. This preponderance of tetracycline resistant strains indicated that widespread dissemination in the population had probably occurred.

The practice of empirical treatment of upper respiratory disease with tetracycline drugs because of their "broad spectrum" activity is commonplace. Because of the previous uniform susceptibility of Group A streptococci to all of the antibacterial drugs, except sulfonamides, in wide use the antibiotic sensitivity of beta-hemolytic streptococci has not usually been determined. It appears that such information is necessary if tetracycline therapy is proposed. The continued appearance of resistant strains may be expected in view of the common usage of the tetracyclines. (Mogabgab, W.J., Pelon, W., Ph.D., An Outbreak of Pharyngitis Due to Tetracycline-Resistant Group A, Type 12 Streptococci: J. Dis. Child., 96: 696-698, December 1958)

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Effect of Alcohol on Risk Taking in Driving

A group of bus drivers in Manchester, England, were studied to determine the effect of alcohol on their judgment concerning their belief in their ability to recognize driving hazards and risks. The conclusions reached were:

1. Drivers who took alcohol became involved in greater hazards than alcohol-free drivers.
2. As the amount of alcohol taken was increased, the drivers were prepared to drive their vehicles through narrower gaps. This revealed that the alcohol adversely affected their judgment.
3. The performance of the drivers as well as their judgment, progressively deteriorated as they consumed more alcohol.
4. After taking alcohol the drivers became more dangerous, although they did not take greater risks. This was due to the fact that the level of confidence above which they were prepared to drive remained unchanged; but at any given size of gap the drivers after taking alcohol were more confident of success and thus prepared to drive through narrower gaps.
5. Alcohol intensified any drivers' tendency to overrate his ability in relation to his performance.

(Cohen, J., Ph.D. et al. The Risk Taken in Driving under the Influence of Alcohol: Brit. Med. J., No. 5085: 1438-1442, June 21, 1958)

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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